

PATHOLOGY (PHD)

Department Website (<http://med.nyu.edu>)

NYSED: 07763 **HEGIS:** 0408.00 **CIP:** 26.0910

Program Description

This specialization trains doctoral candidates in the areas of molecular oncology, viral oncology, virus-cell interaction, immunochemistry, cellular immunology, immunotherapy, molecular genetics, biostatistics, epidemiology, and population health. Research experience may be acquired in the following areas: tumor virus-cell interaction; regulation of gene expression; oncogenes and tumor suppressor genes; DNA repair; lymphomas; cell differentiation; molecular biology of immunoglobulin genes; immunogenetics; autoimmune disease; interferon, interleukins, and growth factors; complement; AIDS; and various problems in cellular, tumor, and parasite immunology.

The immunology and inflammation program will train students to be independent scientists with a strong foundation in the scientific method and detailed knowledge of molecular immunology.

Biostatistics is a scientific discipline that generates novel approaches to study design and data analysis, with a focus on improving human health and health care. Our graduates work in the fields of medicine, public health, and biology. They develop innovations in methodology, theory, and application of biostatistical methods to the entire spectrum of basic, clinical, and translational biomedical research.

Epidemiology is the study and analysis of patterns, causes, and effects of health and disease conditions in defined populations, and the application of this knowledge to control disease. The program offers training in the theory and methods of epidemiology, including study design, measurement, and causal inference, to examine the distribution and determinants of health in human populations.

The population health program provides interdisciplinary instruction and research opportunities addressing the burden and multilevel determinants of health and health disparities in defined populations. The program has research strengths in healthcare delivery science, health disparities, epidemiologic methods, comparative effectiveness and decision science, implementation science, behavior change, and health informatics.

Admissions

All applicants to the Graduate School of Arts and Science (GSAS) are required to submit the general application requirements (<https://gsas.nyu.edu/nyu-as/gsas/admissions/arc.html>), which include:

- Academic Transcripts (<https://gsas.nyu.edu/nyu-as/gsas/admissions/arc/academic-transcripts.html>)
- Test Scores (<https://gsas.nyu.edu/nyu-as/gsas/admissions/arc/test-scores.html>) (if required)
- Applicant Statements (<https://gsas.nyu.edu/nyu-as/gsas/admissions/arc/statements.html>)
- Résumé or Curriculum Vitae
- Letters of Recommendation (<https://gsas.nyu.edu/nyu-as/gsas/admissions/arc/letters-of-recommendation.html>), and
- A non-refundable application fee (<https://gsas.nyu.edu/admissions/arc.html#fee>).

Program Requirements

To qualify for the doctorate, a student must satisfactorily complete graduate courses totaling at least 72 points (a minimum of 32 credits in residence at New York University).

Course	Title	Credits
Major Requirements		
BMSC-GA 2000	Scientific Integrity & the Responsible Conduct Research	1
BMSC-GA 4473	Rigor & Reproducibility	1
BMSC-GA 4451	Data Analysis and Biostatistics with R	2
BMSC-GA 1997	Grant Writing	1
BMSC-GA 3025	Thinking Strategically about your Scientific Career (Individual Development Plan)	1
BMSC-GA 4478	Ethics (Refresher)	0
Electives		
Other Elective Credits		66
Total Credits		72

Additional Program Requirements

Research Rotation

In year one of the program, students are required to complete three lab rotations, each approximately 12 weeks long. They are required to present the work accomplished during the rotation at the lab meeting of each rotation lab.

Thesis Adviser and Research Lab

By the beginning of the second year in the program students must select and be accepted into a research lab. The PI of that lab will serve as the student's thesis adviser.

Qualifying Examination

The qualifying examination is usually administered at the end of the fourth term of full-time study and the completion of at least 32 credits. The qualifying exam is comprised of submission of a written thesis proposal and its oral defense before a committee that consists of three members plus the student's thesis advisor. The exam is intended to test analytical skills, evaluate basic knowledge in the student's research area as well as their capacity to cogently formulate specific questions, and to design and interpret experiments directed toward answering them.

Dissertation Committee

The core dissertation committee consists of 3 members of the faculty plus the advisor. The final reader of the thesis must be selected from outside NYU by the time the thesis is finalized for defense.

Research Paper

All students must write and submit a research paper as the first author or co-first author. The paper must be of publishable quality and submitted for publication in an advisor-approved journal. The paper need not have reached publication by the time of graduation.

Dissertation

At the end of the student's graduate training, they will prepare a written thesis. A thesis constitutes a substantial body of published or publishable research, with a general introduction and discussion to place the findings in a larger context. Permission must be obtained from the student's advisor and thesis committee to initiate the preparation of

the written thesis. When the PhD thesis dissertation is completed and approved by the student's research advisor and examination committee, a formal public seminar is held at which the candidate presents, and afterwards defends the results of their research before the Dissertation Committee.

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
BMSC-GA 2000	Scientific Integrity & the Responsible Conduct Research	1
Elective		3
Elective		3
Elective		3
Credits		10
2nd Semester/Term		
BMSC-GA 4473	Rigor & Reproducibility	1
Elective		3
Elective		3
Elective		3
Credits		10
3rd Semester/Term		
BMSC-GA 4451	Data Analysis and Biostatistics with R	2
Elective		3
Elective		3
Elective		3
Credits		11
4th Semester/Term		
BMSC-GA 1997	Grant Writing	1
Elective		3
Elective		3
Elective		3
Credits		10
5th Semester/Term		
BMSC-GA 3025	Thinking Strategically about your Scientific Career (Individual Development Plan)	1
Elective		3
Elective		3
Elective		3
Credits		10
6th Semester/Term		
BMSC-GA 4478	Ethics (Refresher)	0
Elective		3
Elective		3
Elective		3
Credits		9
7th Semester/Term		
Elective		3
Elective		3
Elective		
Credits		6
8th Semester/Term		
Elective		3
Elective		3
Credits		6
Total Credits		72

Following completion of the required coursework for the PhD, students are expected to maintain active status at New York University by enrolling in a research/writing course or a Maintain Matriculation (MAINT-GA 4747) course. All non-course requirements must be fulfilled prior to

degree conferral, although the specific timing of completion may vary from student-to-student.

Learning Outcomes

Upon successful completion of the program, graduates will:

1. Be capable of conducting independent research.
2. Have a broad basic knowledge of all areas of basic medical sciences.
3. Have a comprehensive knowledge of one area in particular.

Policy NYU Policies

University-wide policies can be found on the New York University Policy pages (<https://bulletins.nyu.edu/nyu/policies/>).

Graduate School of Arts and Science Policies

Academic Policies for the Graduate School of Arts and Science can be found on the Academic Policies page (<https://bulletins.nyu.edu/graduate/arts-science/academic-policies/>).